



**INTERVIEW WITH ARTEM AGINSKIY, PRODUCT
MANAGER, TEXAS INSTRUMENTS**

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INTERVIEW DATE – FRIDAY, SEPTEMBER 25TH, 2015



What is your role and what are you responsible for at Texas Instruments?

- I am Artem Aginskiy, the Product Manager for the ultra-low power C5000 DSP (Digital Signal Processors) portfolio.
- We manage everything from the older C54x processor series to the latest C5517 DSP that Mindtree helped us release to market.

What markets are you addressing with this product portfolio and what are some key features?

- Along with being ultra-low power, we are incorporating more functionality into C5000 DSPs like voice triggering. To support voice recognition, we also offer the following critical features:
 - Beam-forming
 - Noise and echo reduction
 - Voice detection
 - Encoding/Decoding
- We are targeting markets where products need to be differentiated by low power and high functionality like wearables and Internet of Things (IoT). These devices need to process a lot of data and process it locally on the chip without taking up a lot of power. This is where the C5517 DSP and other C55xx DSP devices really shine because they enable features like FFT (Fast Fourier Transforms) acceleration and DSP functionality – simply being able to do a lot of that in a very lower power profile.

Can you provide an overview on C5517 digital signal processor?

- Firstly, the C5517 DSP is important to address applications that have computational needs, beyond just control-based codes. When you really need the processor to do the math, particularly data with a lot of frequencies used frequency-based applications.
- The DSP drives a lot of benefits architecturally. They are dual-MAC, so the chips can do math in parallel and offer FFT co-processor acceleration. So the chip can do

FFT in hardware rather than software, which is significantly more power efficient.

- Lastly, the C5517 DSP has extensive peripheral connectivity to enable a large range of applications. Some of the newest peripherals for this family include McBSP and UHPI.

Describe the benefits of the TI C5517 DSP chip for end users?

- The end users for these devices vary greatly, the chips are very successful in audio and speech-oriented products, wearables and sensor analytics. Since the devices are targeted toward an agile market they are easy-to-use and easy to get started with. They don't have complicated SDKs (software development kit) and are designed to be used with the peripherals. Rather than having high overhead, the chip is optimized to have a procedural programming approach using a chip support library, eliminating additional time in getting started.

How has Mindtree helped you build this chip?

- When we launched the C5517 DSP, Mindtree was heavily involved, locally and remotely supporting software development.
- Mindtree has helped us a lot in software development; they've expanded our example codes and the use case library. This expansion has helped customers get started using low-cost tools that are available on TI.com.
- The C5517 DSP project introduced a lot of new peripherals that we have not had previously in the family. Our existing code base was lacking good examples for these new peripherals. We asked Mindtree to go through that code to create examples on how customers could get started more quickly and not waste time trying to figure out how to use a particular peripheral.

While doing that project, Mindtree also went through and updated the existing peripherals using the latest usability examples and best practices.

- We built out a package of additional examples, which supported the C5517 DSP launch in the market. Since then, we have received very positive feedback from customers who got started using the package and found those examples really helpful.
- Mindtree helped with another project on vision analytics using C5517 DSP. The project mandate was to solidify and improve the stability and reliability of the USB drivers; Mindtree’s experience with USB was extremely helpful. We were quickly able to get to the root cause and quickly solve the USB challenge in our allotted timeframe. The speed and quality was very high, we were able to resolve the issues quickly and not have it impact any of our customers.

Describe what it’s like to work with Mindtree?

- Being truly connected was critical because we could plan our timeline accordingly and not suffer from delays due to lack of communication. It seems like a basic thing, but we really value how communication and transparency helps projects run more smoothly. Mindtree has done an exceptional job and it’s one of the biggest things that impressed me.
- From a technical perspective, Mindtree has solid expertise, which is why we continue to go to Mindtree for projects; we were very pleased with the quality of the work. We did not run into any bugs and we were happy with the solid delivery of the project, from communication and transparency to project management and technical quality. Ongoing support for C55xx DSP devices has been very good as well.

Follow-up Question:

How has Mindtree helped you in silicon development activities of C5517 device?

Mindtree owned the silicon development of the C5517 DSP using TI methodologies. Design activity was very transparent, with Mindtree clearly reporting progress on a regular basis, proactively identifying issues, adding key resources as needed and supporting silicon needs after the design was complete. Silicon was operational first pass and met device requirements.

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